If you want a better answer, use better numbers!

Here's another look at the rectangle problem...

What is the area of this rectangle?

Multiplying and Dividing

Follow this rule whenever you have to multiply or divide numbers that include error.

1. Count the number of Sig Figs in each of the numbers you are about to multiply or divide.
2. Identify the smallest number of Sig Figs.
3. Multiply/Divide your numbers as usual.
4. Round your answer to the number of Sig Figs you identified in Step 2.

Adding and Subtracting

Follow this rule whenever you have to add or subtract numbers that include error.

1. Count the number of Decimal Places in each of the numbers you are about to add or subtract.
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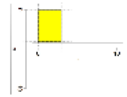
What is the area of this box?

Use the rulers provided (and Sig Figs) to find the area of the box below...



Some Sample Problems...

Keep in mind the rules you just learned while you solve the problems below.

2.75 + 27.5 = ?

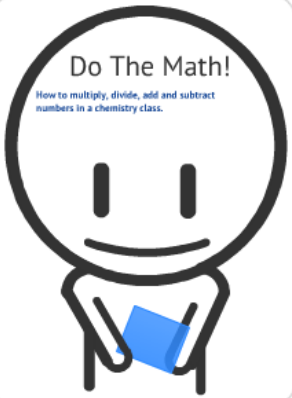
40 x 7.0 = ?

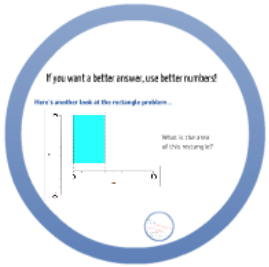
27/3.0 = ?

33 - 1.1 = ?

Do The Math!

How to multiply, divide, add and subtract numbers in a chemistry class.

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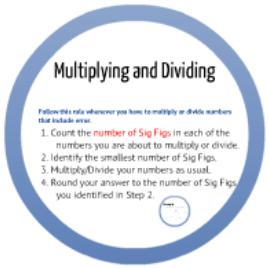
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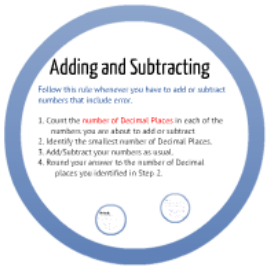
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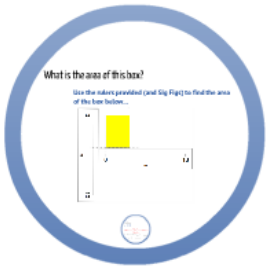
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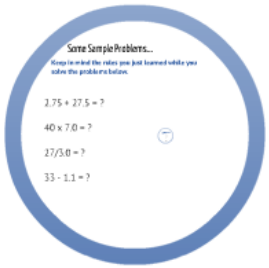
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40 x 7.0 = ?
27/3.0 = ?
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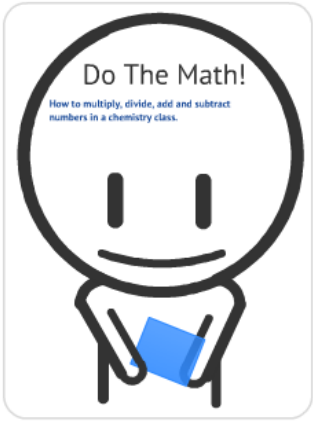
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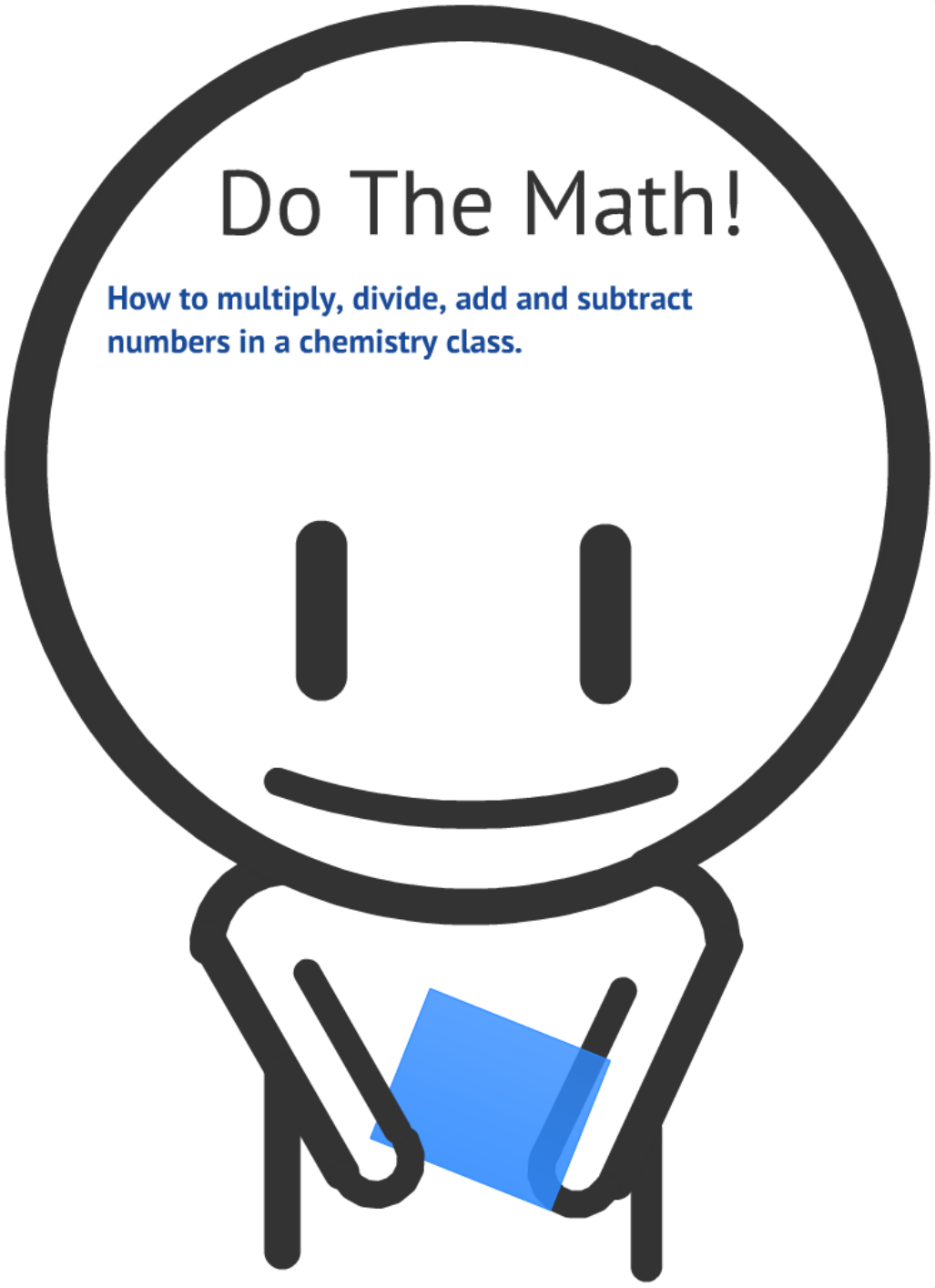
How to multiply, divide, add and subtract numbers in a chemistry class.

Do The Math!

How to multiply, divide, add and subtract numbers in a chemistry class.



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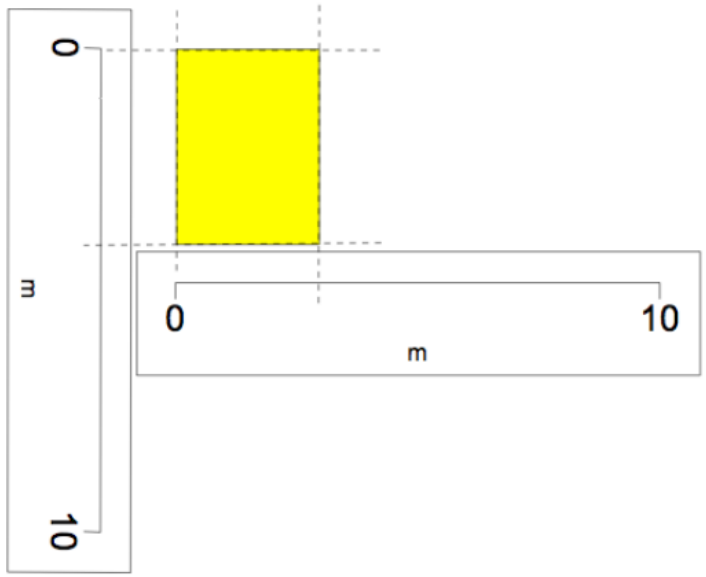

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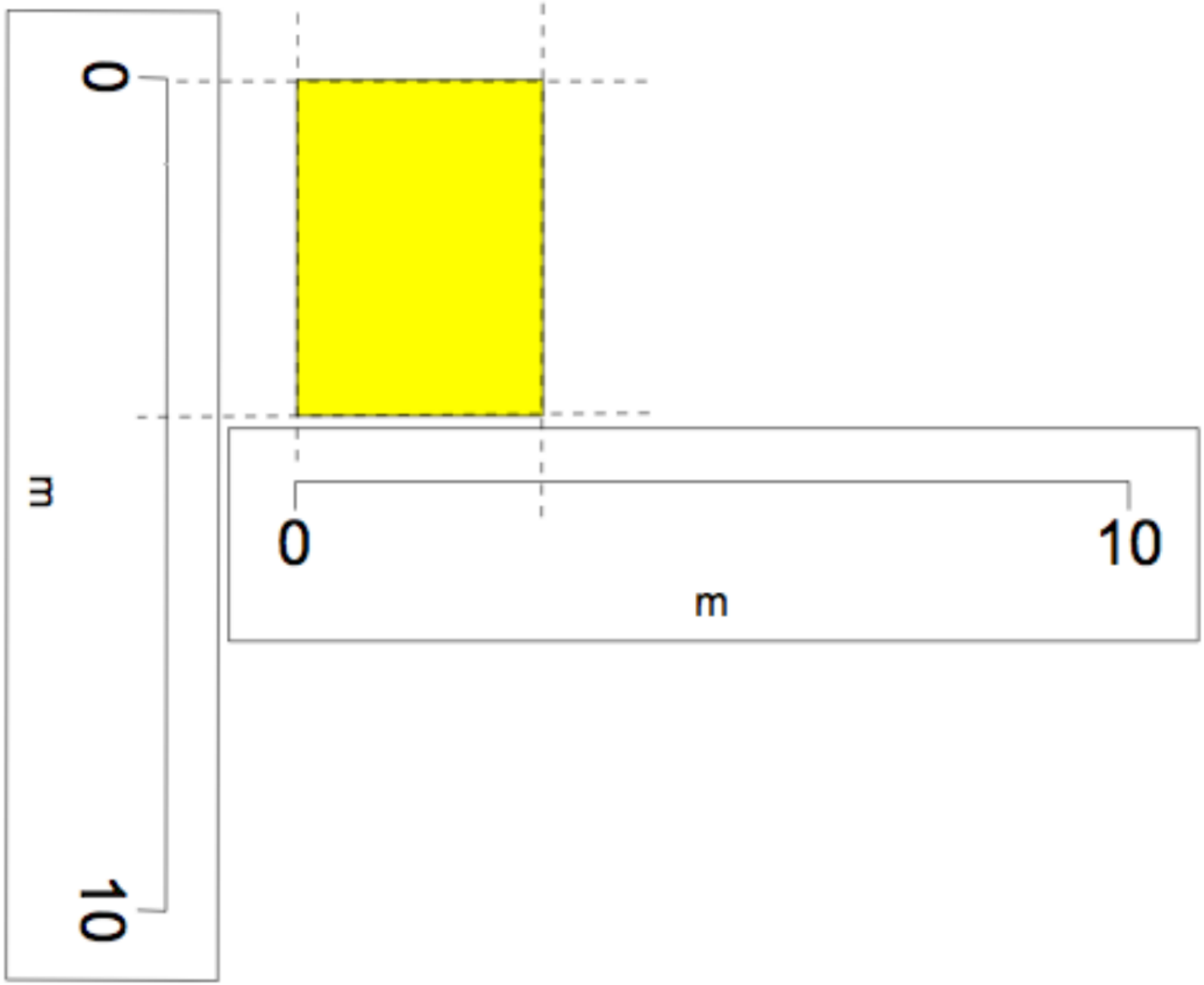
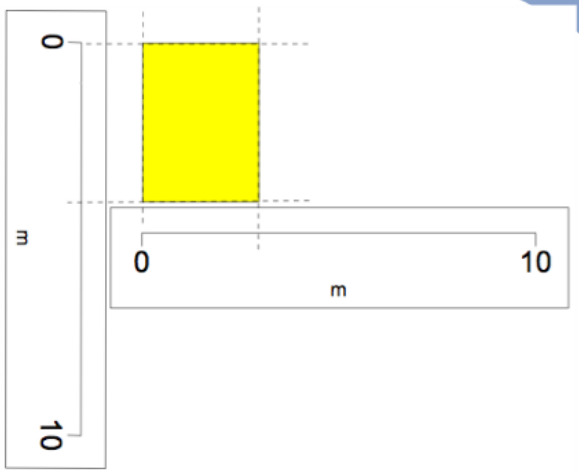


Yellow Box Area



Height = 4 - 5 m ?
Width = 3 - 2 m ?

Calculation 1:
4m x 3m = 12 sq. m

Calculation 2:
5m x 3m = 15 sq. m

Calculation 3:
4m x 2m = 8 sq. m

Calculation 4:
3m x 2m = 6 sq. m

The reasonable answers spread from 6 - 15.

Which is the correct answer??

None of them...

The correct answer is 10 sq. m

Multiplying and Dividing

Follow this rule whenever you have to multiply or divide numbers that include error.

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2. Identify the smallest number of Sig Figs.
3. Multiply/Divide your numbers as usual.
4. Round your answer to the number of Sig Figs you identified in Step 2.

Following Up:

The best estimates for the yellow square gave us this math...

4m x 3m = ?

4m has 1 Sig Fig
3m has 1 Sig Fig
Therefore, the answer can only have 1 Sig Fig

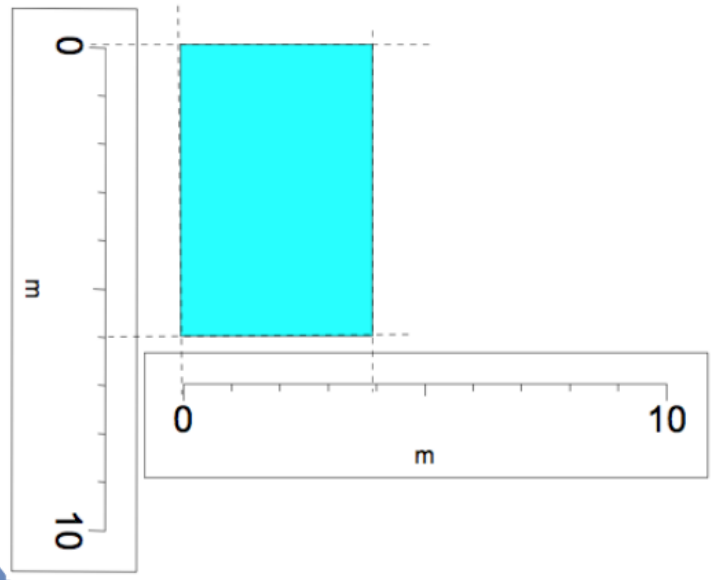
4m x 3m = 12 sq. m

but 12 has 2 Sig Figs. You need to round your answer to the nearest number with 1 Sig Figs.

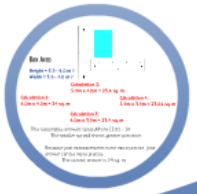
4m x 3m = 10 sq. m

If you want a better answer, use better numbers!

Here's another look at the rectangle problem...



What is the area of this rectangle?



If you want a better answer, use better numbers:

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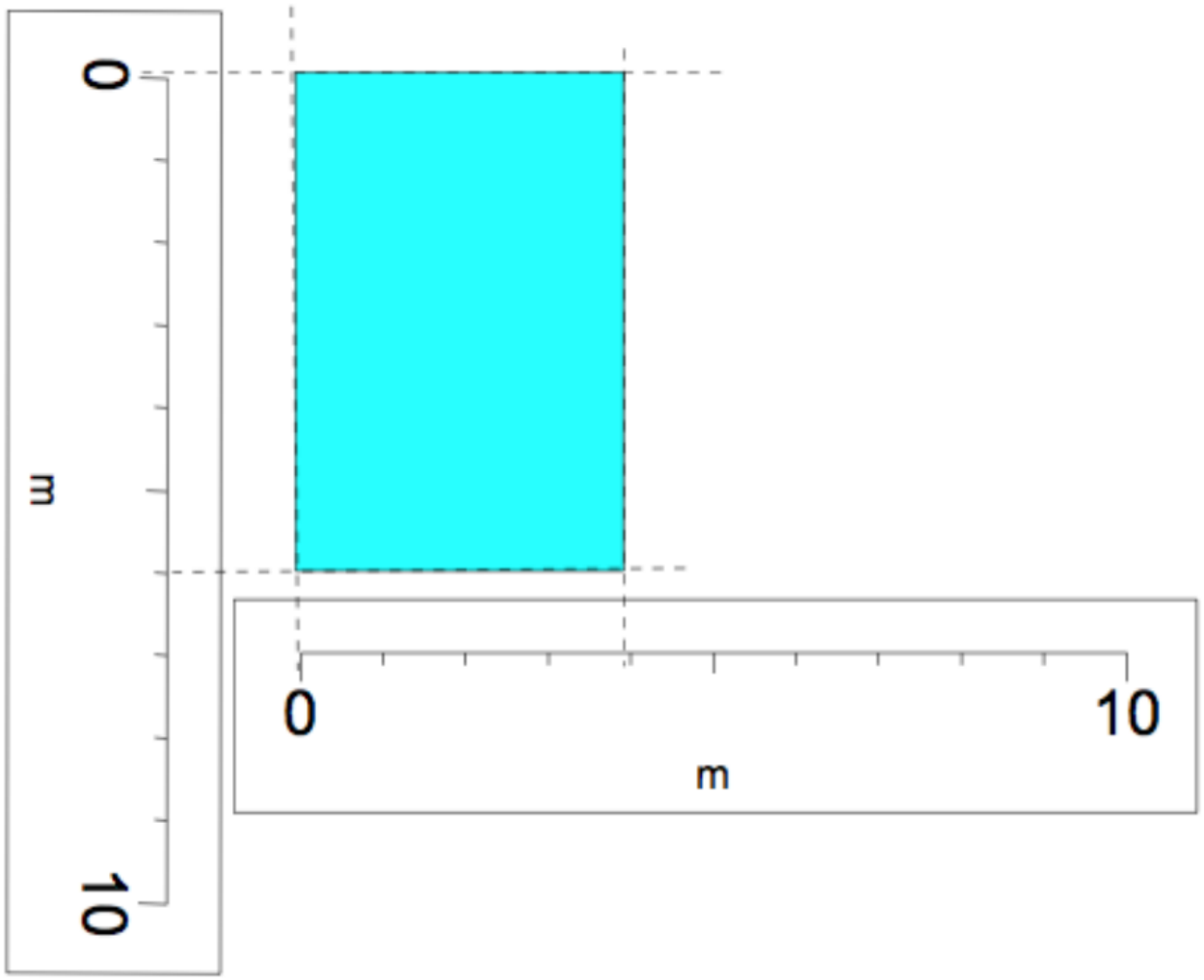

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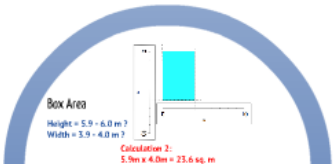
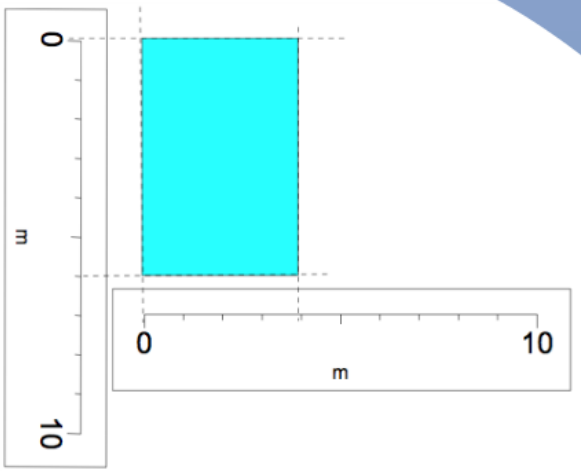


Box Area



Height = 5.9 - 6.0 m ?
Width = 3.9 - 4.0 m ?

Calculation 2:
5.9m x 4.0m = 23.6 sq. m

Calculation 1:
6.0m x 4.0m = 24 sq. m

Calculation 4:
5.9m x 3.9m = 23.01 sq. m

Calculation 3:
6.0m x 3.9m = 23.4 sq. m

The reasonable answers spread from 23.01 - 24.
The smaller spread shows greater precision.

Because your measurements were more precise, your answer can be more precise...
The correct answer is 24 sq. m

Adding and Subtracting

Follow this rule whenever you have to add or subtract numbers that include error.

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2. Identify the smallest number of Decimal Places.
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An Example

You and your lazy lab partner each have pieces of equipment that need to be connected together...

Your piece is 1.500 m long. Your lab partner's might be 2 m... maybe. He's not really sure.

How long will the combined piece be?

If you said 3.500 m long, you sent your reader a coded message about the amount of error. Was it the right coded message?

If you said 3 m you sent your readers a coded message. What did you say?

Following Up:

Adding the pieces gave us this math...

1.500m + 2m = ?

1.500m has 3 Decimal Places
2m has no Decimal Places
Therefore, the answer cannot have any Decimal places

1.500m + 2m = 3.500 m

but 3.500 has three Decimal Places. You need to round your answer to the nearest whole number (with no Decimal Places).

1.500m + 2m = 3 or 4 m

Some Sample Problems...

Keep in mind the rules you just learned while you solve the problems below.

2.75 + 27.5 = ?

40 x 7.0 = ?

27/3.0 = ?

33 - 1.1 = ?

Answers:

Rule 1: When multiplying or dividing, keep the smallest number of Sig Figs
Rule 2: When adding or subtracting, keep the smallest number of Decimal Places

$2.75 + 27.5 = 30.2$

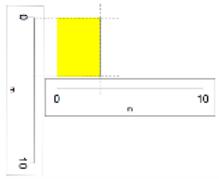
$40 \times 7.0 = 300$

$27/3.0 = 9.0$

$33 - 1.1 = 32$

What is the area of this box?

Use the rulers provided (and Sig Figs) to find the area of the box below...



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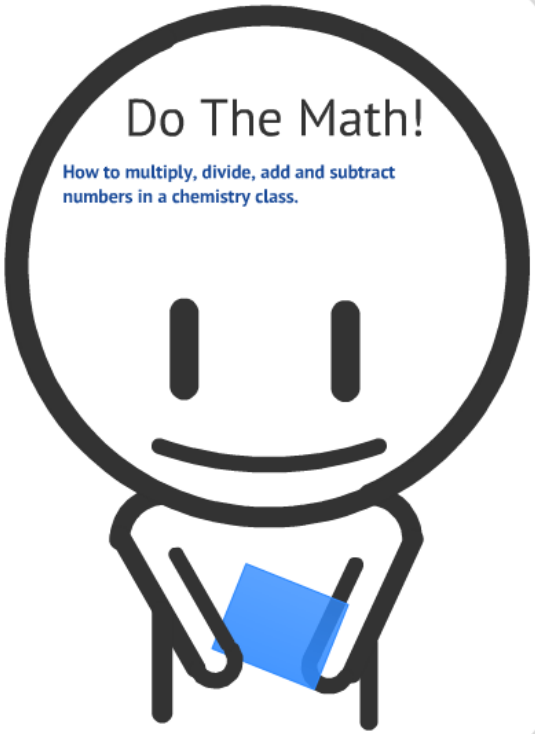

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33 - 1.1 = ?